

19. STUDIES ON SOME PASSALIDS (COLEOPTERA)  
OF KERALA—II. BIOLOGY AND BIONOMICS OF  
*BASILIANUS INDICUS* KUWERT AND  
*B. NEELGHERRIENSIS* PERCH

[Continued from Vol. 65 (2): 508]

(With a plate with thirteen text-figures)

INTRODUCTION

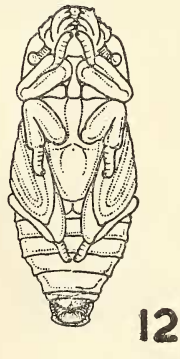
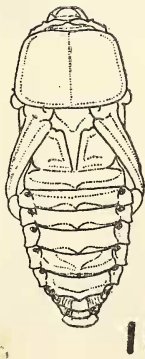
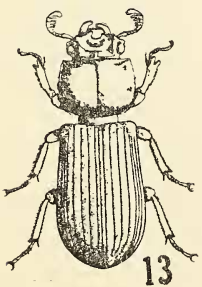
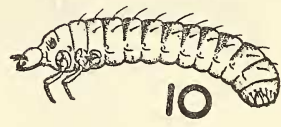
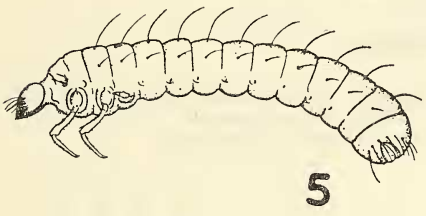
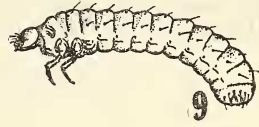
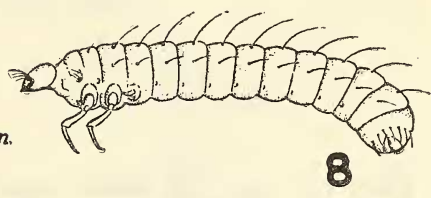
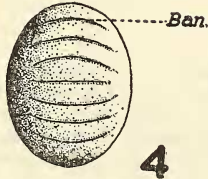
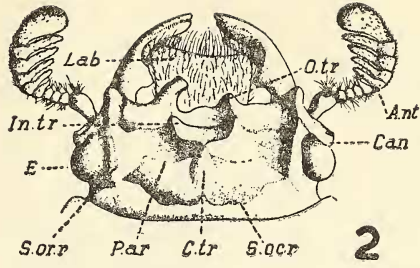
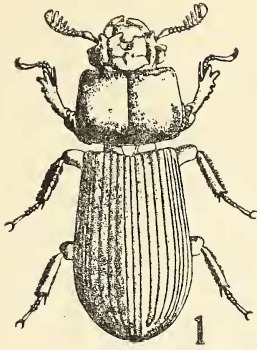
Three species of Passalids bore into the felled timbers in the forest regions of Kerala. These are *Pleurarius brachyphyllus* Stol, *Basilianus indicus* Kuwert and *Basilianus neelgherriensis* Perch. The biology of *P. brachyphyllus* Stol. was presented in the first part of these contributions (Joseph 1968). The biology of the other two species is also similar to that of *P. brachyphyllus*. There, however, exists some morphological differences between the immature stages of the different species. Observations made on these as well as those made on the habits of all the three species are embodied in this paper.

The collection of the different stages and laboratory rearing were done as described earlier by Joseph (1968).

OBSERVATIONS

The Table gives a comparison of the important biological and morphological features of the three species of Passalids. It will be observed that the size of the stages and the duration of the different instars of the two species of *Basilianus* are considerably less than those of *P. brachyphyllus*; there is however no significant differences in these characters between the two species of *Basilianus*.

In *Basilianus* spp. mating lasts for 2 to 3 hours. Preoviposition period lasts for about 2 months under laboratory conditions. In nature, the eggs are laid in the blind ends of the tunnels within the timber, where they are studded on moist blocks of wood powder, in groups of 25 to 30. Generally pupation takes place inside a loose chamber of wood powder. The exuvium of the last instar grub is retained ventrally or at the caudal tip of the pupa. The newly emerged beetle is soft, delicate and pinkish. It attains the proper hardness and oily black colour in about 50 days. Under laboratory conditions the adults survive up to one year. The sex ratio is 1:1.



For explanation, see reverse

FIGS. 1-7, 11-12. *B. indicus* Kuwert: 1. Adult  $\times 1.5$ ; 2. Head  $\times 6$ ; 3. Egg  $\times 6$ ; 4. Egg towards hatching  $\times 6$ ; 5. I instar grub  $\times 3$ ; 6. II instar grub  $\times 1.5$ ; 7. III instar grub  $\times 1.2$ ; 11. Pupa (dorsal view)  $\times 1.5$ ; 12. Pupa (ventral view)  $\times 1.5$ . 8-10, 13. *B. neelgherriensis* Perch: 8. I instar grub  $\times 3$ ; (9. II instar grub  $\times 1.5$ ; 10. III instar grub  $\times 1.2$ ; 13. Adult beetle  $\times 1.5$ .

#### Abbreviations

Ant: Antenna; ban: bands; Can: Canthus; C. tr: Central tubercle; E: Eye; In. tr.: Inner tubercle; Lab: Labrum; O. tr.: Outer tubercle; P. ar.: Parietal ridge; S. Ocr.: Supra Occipital ridge; S.Or.r.: Supra Orbital ridge.

TABLE  
MEASUREMENTS, DIAGNOSTIC CHARACTERS AND DURATIONS OF THE DIFFERENT STAGES OF PASSALID BEETLES

Stages & Characters	<i>P. brachyphyllus</i>	<i>B. indicus</i>	<i>B. neelgherriensis</i>
<i>Egg</i>			
Colour	Black	Reddish brown—later turns green, 6 to 7 transverse bands are present.	Reddish brown—turning green.
Shape & size	Spherical 4 mm diameter	Ovate—4 × 2 mm (Figs. 3 & 4)	Smaller than <i>B. indicus</i> egg by 1-2 mm
Incubation period	28-34 days	25-30 days	25-30 days
<i>I instar grub</i>			
Length	29 mm	15-20 mm	12-15 mm
Thoracic width	4-5 mm	3-4 mm	3-4 mm
Duration	50-60 days	50-60 days (Fig. 5)	45-50 days (Fig. 8)
<i>II instar grub</i>			
Length	35-40 mm	30-35 mm	25-28 mm
Thoracic width	8 mm	5-6 mm	5-6 mm
Chaetotaxy	Long hairs are clavate. Two long hairs on the 9th abdominal sternum. Large number of small hairs are present on the body	Long hairs are filiform. Sterna devoid of long hairs—Large number of small hairs are present on the body	Sterna devoid of long hairs. Body devoid of small hairs.
Duration	55-65 days	50-60 days (Fig. 6)	50-55 days (Fig. 9)
<i>III instar grub</i>			
Length	48-55 mm	35-40 mm	30-35 mm
Thoracic width	10 mm	8 mm	8 mm
Duration	85-95 days	70-80 days (Fig. 7)	70-80 days (Fig. 10)

Stages & Characters	<i>P. brachyphyllus</i>	<i>B. indicus</i>	<i>B. neelgherriensis</i>
<i>Pupa</i>			
Length	40-45 mm	32-34 mm	22-25 mm
Head width	9-12 mm	7 mm	5 mm
Thoracic width	15-17 mm	11 mm	8 mm
Duration	26-32 days	22-26 days (Figs. 11 & 12)	20-25 days
<i>Adult</i>			
Length	40-45 mm	30-35 mm	15-20 mm
Head width	10 mm	7 mm	5 mm
Maximum abdominal width	18 mm	13-15 mm (Fig. 1)	9 mm (Fig. 13)
<i>Head</i>			
Tip of supra occipital ridge	Slightly concave	Slightly semi-circular	Perfectly semi-circular
Supra orbital ridge	Ends in an acute peak	Ends bluntly	Ends bluntly
Canthus ridge	Sharp	Not prominent	Not prominent
Left outer tubercle	Slightly larger than the right	Produced considerably forward and inward than the right	Slightly larger than the right
Inner tubercles	Symmetrical	Asymmetrical—The right one is larger than the left	Asymmetrical—The left one is larger than the right
Labrum	Anterior end slightly concave	Anterior end deep concave and hairy	Moderately concave
Lacinia	One apical spine and one sub-apical spine	One apical spine alone is present (Fig. 2)	One apical spine alone is present